

## REVIEWS.

Wheeler, William Morton. *Ants, Their Structure, Development and Behavior*. 830 pp. XXV+663, figs. 286. New York, 1910, Columbia University Press. The MacMillan Co. \$5.00.

It is very rarely that the available literature of entomology has been so enriched by a single contribution as by Professor Wheeler's book on ants, for until its appearance, the general reader, and even the student of entomology, has had no place to go for an accurate digest of the facts relating to this most interesting and important group of insects. The author's extensive contributions to myrmecology during the past decade have rendered him peculiarly fit to undertake this difficult task of presenting the subject both in its zoölogical and psychological aspects, since a very considerable part of the book deals with his own investigations, hitherto scattered, like the other literature of the subject, in a large number of scientific journals.

The subject matter is presented under three main divisions: structure, development and behavior. The last of these occupies by far the larger part of the book, representing the aspect of greatest interest at the present time, as well as the one into which the author's research has principally led him.

There are very complete accounts of the external and internal structure of ants, preceded by an introductory chapter on "Ants as dominant insects." The presentation of their development is supplemented by an extensive chapter of the complicated phenomena of polymorphism and its causes. Following these are chapters on the history of myrmecology and the classification of ants, their geographical distribution, and a summary of the present knowledge concerning fossil ants.

Introducing the chapters on ethological topics is an account of the habits of ants in general and their various types of nests. Following these are taken up the habits of a number of circumscribed groups, each of which illustrates a characteristic mode of life. These are: the Ponerine ants, the driver and legionary ants, the harvesting ants, the fungus-growing ants and the honey ants. Together with these is a chapter on the relations of ants to vascular plants, and following them three chapters on myrmecophilous insects.

A consideration of the compound nests of ants introduces the matter relating to parasitic and slave-making ants which is very full and complete. The last three chapters on the sensations of ants, the instinctive behavior of ants and the plastic behavior of ants deal with the fascinating psychological aspects of myrmecology.

The large series of illustrations are uniformly excellent, and with several appendices on methods, classification, economic importance, and literature, add much to the usefulness of the book.

C. T. BRUES.

Code des Couleurs, à l'usage des Naturalistes, Artistes, Commerçants et Industriels. 720 Echantillons de Couleurs classés d'après la méthode Chevreul simplifiée. par Paul Klincksieck, et Th. Valette, Paris. (1908). G. E. Stechert, New York City, Agent.

This is a book of 32 pages of text, and 50 plates, containing 720 blocked colors; a table of ten principal colors in eighteen languages, and a table of contents; the whole making a neat and portable volume. The publication of this book is a great boon to systematic naturalists everywhere, as Ridgway's Nomenclature of Colors for Naturalists, has been out of print for some time, and it has been practically impossible to obtain a copy of it. This book was planned in 1906, through a real need felt in the study and description of Mushrooms; thus it was planned, in part, by a naturalist for naturalists. The hope is expressed that this color code may recommend itself universally, and there is certainly great need of a uniform nomenclature of colors, accepted and used by naturalists everywhere. As the recognition of geographic isolation as a factor in evolution comes to be better known and studied, it is imperative that a close study be made of minute differences in form and color, in order to understand the probable evolution of species or subspecies.

The fundamental colors are six, those of the solar spectrum, and the tones are indicated by a number, the method devised by Chevreul; which is decidedly better than "Se fatiguer pour trouver dans les trois Règnes ou ailleurs le nom d'un équivalent qui lui ressemble plus ou moins vaguement," and "qui ne signifient rien de précis." Every hundred numbers is equivalent to one of the colors of the solar spectrum.

Part II is by Th. Valette, and considers the following subjects:

1. Des couleurs au point de vue physique.
2. Sources de lumière.—Lumières colorées.
3. Des couleurs matérielles ou pigments colorés.
4. Classification des couleurs.
5. Code des Couleurs à l'usage des naturalistes.
6. Confection du Code des Couleurs.
7. Examen des couleurs complémentaires contrastes.

The book ought to be in use by every naturalist, dealing with groups which exhibit color differences, thus helping toward a uniform nomenclature, instead of indicating a color by some vague term, which leaves an idea of uncertainty. Stability in terminology ought to be as important as the rules of nomenclature,—priority, etc., and should be taken up by committees on nomenclature.

FORDYCE GRINNELL, JR.

Needham, James G. *General Biology*; a book of outlines for the general student. pp. xiv; 542, figs. 287. Ithaca, N. Y. 1910, The Comstock Pub. Co. Price \$2.00.

Entomologists will be much gratified to see the wide extent to which Professor Needham has drawn upon insects to furnish the material for illustrating many of the biological topics treated in this book. It is intended to serve as a guide for the One-year course in biology as given in most colleges where the work is divided between zoölogy and botany, but the two are not kept separate in the present outline which aims to give a general idea of the broader principles of the evolution, adaption and interrelationship of organisms, rather than the specific morphological studies usually presented to students of this class. Such a presentation should prove attractive to the young college student, particularly if combined with a really enthusiastic teacher.

C. T. BRUES.

*The Fungus Gnats of North America.* By O. A. Johannsen. Bull. 172, Maine Agric. Exp. Sta., pp. 209-276, pls. 3 (March 1910).

This very valuable contribution to American dipterology deals with about half of the North American Mycetophilidæ, a family which has been in great need of revision for many years. Eight subfamilies are recognized of which five, the Bolitophilinæ, Mycetobiinæ, Diadocidinæ, Ceroplatinæ and Macrocerinæ are considered in the present paper. Seventy-one species are recognized and described, belonging to a number of genera, the largest, *Platyura*, having 26 species referred to it.

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